

## ABSTRACT

A system and method for the detection of analytes in a fluid, in one embodiment, includes a light source, a sensor array, sensing elements, and a detector. More particularly, the system and method relate to discriminating mixtures of analytes in a fluid. The sensor array is formed from a supporting member into which a plurality of sensing elements may be formed. The sensing element may have a predefined shape. The sensing element may be configured to produce a signal when the sensing element interacts with the analyte. In one embodiment, the identity of the analyte may be determined by the detection of the signal and the shape of the sensing element. Using pattern recognition techniques, the analytes within a multi-analyte fluid may be characterized.